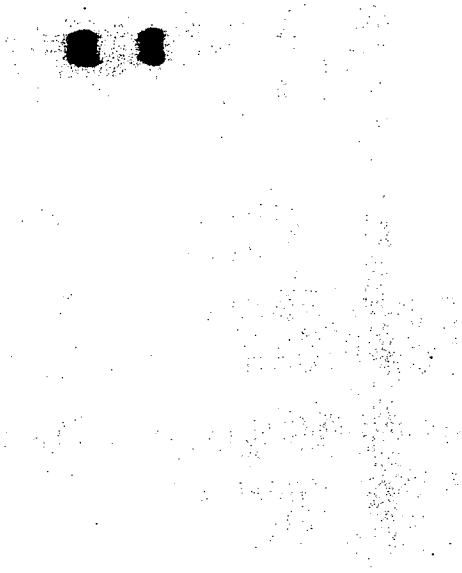
ovary
liver
muscle
testis
spleen
intestine
pancreas
seminal vesicle
kidney
brain
thymus
lung
heart

FIG. 1

```
1   CGGGCCAGGAGGAGGACCCCCACCTGTGAGCCTGCGACCCCCTTATGTTGCAGGCGAGAC   60
    R  A  R  R  R  T  P  T  C  E  P  A  T  P  L  C  C  R  R  D
61  CATTACGTAGACTTCCAGGAACTGGGATGGCGGGACTGGATACTGCAGCCCGAGGGGTAC  120
    H  Y  V  D  F  Q  E  L  G  W  R  D  W  I  L  Q  P  E  G  Y
121 CAGCTGAATTACTGCAGTGGGCAGTGCCCTCCCCACCTGGCTGGCAGCCCAGGCATTGCT  180
    Q  L  N  Y  C  S  G  Q  C  P  P  H  L  A  G  S  P  G  I  A
181 GCCTCTTTCCATTCTGCCGTCTTCAGCCTCCTCAAAGCCAACAATCCTTGGCCTGCCAGT  240
    A  S  F  H  S  A  V  F  S  L  L  K  A  N  N  P  W  P  A  S
241 ACCTCCTGTTGTGTCCCTACTGCCCGAAGGCCCCTCTCTCTCCTCTACCTGGATCATAAT  300
    T  S  C  C  V  P  T  A  R  R  P  L  S  L  L  Y  L  D  H  N
301 GGCAATGTGGTCAAGACGGATGTGCCAGATATGGTGGTGGAGGCCTGTGGCTGCAGCTAG  360
    G  N  V  V  K  T  D  V  P  D  M  V  V  E  A  C  G  C  S  *
```

FIG. 2

Family member	% identity with GDF-12
GDF-1	43
GDF-3	36
GDF-5	36
GDF-6	39
GDF-7	42
GDF-9	30
BMP-3	37
BMP-2	43
BMP-4	42
Vgr-1	41
OP-1	40
BMP-5	38
OP-2	39
MIS	30
Inhibin-α	27
Inhibin-βA	47
Inhibin-βB	50
Nodal	38
GDNF	21
TGF-β1	36
TGF-β2	36
TGF-β3	41

FIG. 4

```
   1  GAGCTGTGAGGGTCAAGCACAGCTATCCATCAGATGATCTACTTTCAGCCTTCCTGAGTC   60
                                                  M  R  L  P  D  V  Q  L
  61  CCAGACAATAGAAGACAGGTGGCTGTACCCTTGGCCAAGGGTAGGTGTGGCAGTGGTGTC  120
   W  L  V  L  L  W  A  L  V  R  A  Q  G  T  G  S  V  C  P  S
 121  TGCTGTCACTGTGCCCTCATTGGCCCCCAGCAATCAGACTCAACAGACGGAGCAACTGCC  180
 181  ATCCGAGGCTCCTGAACCAGGGCCATTCACCAGGAGCATGCGGCTCCCTGATGTCCAGCT  240
   C  G  G  S  K  L  A  P  Q  A  E  R  A  L  V  L  E  L  A  K
 241  CTGGCTGGTGCTGCTGTGGGCACTGGTGCGAGCACAGGGGACAGGGTCTGTGTGTCCCTC  300
   Q  Q  I  L  D  G  L  H  L  T  S  R  P  R  I  T  H  P  P  P
 301  CTGTGGGGGCTCCAAACTGGCACCCCAAGCAGAACGAGCTCTGGTGCTGGAGCTAGCCAA  360
   Q  A  A  L  T  R  A  L  R  R  L  Q  P  G  S  V  A  P  G  N
 361  GCAGCAAATCCTGGATGGGTTGCACCTGACCAGTCGTCCCAGAATAACTCATCCTCCACC  420
   G  E  E  V  I  S  F  A  T  V  T  D  S  T  S  A  Y  S  S  L
 421  CCAGGCAGCGCTGACCAGAGCCCTCCGGAGACTACAGCCAGGGAGTGTGGCTCCAGGGAA  480
   L  T  F  H  L  S  T  P  R  S  H  H  L  Y  H  A  R  L  W  L
 481  TGGGGAGGAGGTCATCAGCTTTGCTACTGTCACAGACTCCACTTCAGCCTACAGCTCCCT  540
   H  V  L  P  T  L  P  G  T  L  C  L  R  I  F  R  W  G  P  R
 541  GCTCACTTTTCACCTGTCCACTCCTCGGTCCCACCACCTGTACCATGCCCGCCTGTGGCT  600
   R  R  R  Q  G  S  R  T  L  L  A  E  H  H  I  T  N  L  G  W
 601  GCACGTGCTCCCCACCCTTCCTGGCACTCTTTGCTTGAGGATCTTCCGATGGGGACCAAG  660
   H  T  L  T  L  P  S  S  G  L  R  G  E  K  S  G  V  L  K  L
 661  GAGGAGGCGCCAAGGGTCCCGCACTCTCCTGGCTGAGCACCACATCACCAACCTGGGCTG  720
   Q  L  D  C  R  P  L  E  G  N  S  T  V  T  G  Q  P  R  R  L
 721  GCATACCTTAACTCTGCCCTCTAGTGGCTTGAGGGGTGAGAAGTCTGGTGTCCTGAAACT  780
   L  D  T  A  G  H  Q  Q  P  F  L  E  L  K  I  R  A  N  E  P
 781  GCAACTAGACTGCAGACCCCTAGAAGGCAACAGCACAGTTACTGGACAACCGAGGCGGCT  840
   G  A  G  R  A  R  R  R  T  P  T  C  E  P  A  T  P  L  C  C
 841  CTTGGACACAGCAGGACACCAGCAGCCCTTCCTAGAGCTTAAGATCCGAGCCAATGAGCC  900
   R  R  D  H  Y  V  D  F  Q  E  L  G  W  R  D  W  I  L  Q  P
 901  TGGAGCAGGCCGGGCCAGGAGGAGGACCCCCACCTGTGAGCCTGCGACCCCCTTATGTTG  960
   E  G  Y  Q  L  N  Y  C  S  G  Q  C  P  P  H  L  A  G  S  P
 961  CAGGCGAGACCATTACGTAGACTTCCAGGAACTGGGATGGCGGGACTGGATACTGCAGCC 1020
   G  I  A  A  S  F  H  S  A  V  F  S  L  L  K  A  N  N  P  W
1021  CGAGGGGTACCAGCTGAATTACTGCAGTGGGCAGTGCCCTCCCCACCTGGCTGGCAGCCC 1080
   P  A  S  T  S  C  C  V  P  T  A  R  R  P  L  S  L  L  Y  L
1081  AGGCATTGCTGCCTCTTTCCATTCTGCCGTCTTCAGCCTCCTCAAAGCCAACAATCCTTG 1140
   D  H  N  G  N  V  V  K  T  D  V  P  D  M  V  V  E  A  C  G
1141  GCCTGCCAGTACCTCCTGTTGTGTCCCTACTGCCCGAAGGCCCCTCTCTCTCCTCTACCT 1200
   C  S  *
1201  GGATCATAATGGCAATGTGGTCAAGACGGATGTGCCAGATATGGTGGTGGAGGCCTGTGG 1260
1261  CTGCAGCTAGCAAGAGGACCTGGGGCTTTGGAGTGAAGAGACCAAGATGAAGTTTCCCAG 1320
1321  GCACAGGGCATCTGTGACTGGAGGCATCAGATTCCTGATCCACACCCCAACCCAACAACC 1380
1381  ACCTGGCAATATGACTCACTTGACCCCTATGGGACCCAAATGGGCACTTTCTTGTCTGAG 1440
1441  ACTCTGGCTTATTCCAGGTTGGCTGATGTGTTGGGAGATGGGTAAAGCGTTTCTTCTAAA 1500
1501  GGGGTCTACCCAGAAAGCATGATTTCCTGCCCTAAGTCCTGTGAGAAGATGTCAGGGACT 1560
1561  AGGGAGGGAGGGAGGGAAGGCAGAGAAAAATTACTTAGCCTCTCCCAAGATGAGAAAGTC 1620
1621  CTCAAGTGAGGGGAGGAGGAAGCAGATAGATGGTCCAGCAGGCTTGAAGCAGGGTAAGCA 1680
1681  GGCTGGCCCAGGGTAAGGGCTGTTGAGGTACCTTAAGGGAAGGTCAAGAGGGAGATGGGC 1740
1741  AAGGCGCTGAGGGAGGATGCTTAGGGGACCCCCAGAAACAGGAGTCAGGAAAATGAGGCA 1800
1801  CTAAGCCTAAGAAGTTCCCTGGTTTTTCCCAGGGGACAGGACCCACTGGGAGACAAGCAT 1860
1861  TTATACTTTCTTTCTTCTTTTTTATTTTTTTGAGATCGAGTCTCGCTCTGTCACCAGGCT 1920
1921  GGAGTGCAGTGACACGATCTTGGCTCACTGCAACCTCCGTCTCCTGGGTTCAAGTGATTC 1980
1981  TTCTGCCTCAGCCTCCCGAGCAGCTGGGATTACAGGCGCCCACTAATTTTTGTATTCTTA 2040
2041  GTAGAAACGAGGTTTCAACATGTTGGCCAGGATGGTCTCAATCTCTTGACCTCTTGATCC 2100
2101  ACCCGACTTGGCCTCCCGAAGTGATGAGATTATAGGCGTGAGCCACCGCGCCTGGCTTAT 2160
2161  ACTTTCTTAATAAAAAGGAGAAAGAAAATCAACAAATGTGAGTCATAAAGAAGGGTTAGG 2220
2221  GTGATGGTCCAGAGCAACAGTTCTTCAAGTGTACTCTGTAGGCTTCTGGGAGGTCCCTTT 2280
2281  TCAGGGGTGTCCACAAAGTCAAAGCTATTTTCATAATAATACTAACATGTTATTTGCCTT 2340
2341  TTGAATTCTCATTATCTTAAAATTGTATTGTGGAGTTTTCCAGAGGCCGTGTGACATGTG 2400
2401  ATTACATCATCTTTCTGAC  2419
```

FIG. 3